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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,844	04/02/2001	Sailaja S.K. Attili	CSCO-007/92821	1164

26392 7590 06/18/2004

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EXAMINER

STRANGE, AARON N

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/824,844

Applicant(s)

ATTILI ET AL.

Examiner

Aaron Strange

Art Unit

2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06102004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Appropriate correction is required.

- a. On Page 12, Lines 7-8, there appears to be a typographical error "if no CDP related messages are not received on the port".

Claim Objections

2. Claims 1,7,12,13,17,21,26,32,35 and 39 are objected to because of the following informalities: Appropriate correction is required.

3. With regard to claim 1, there appears to be a typographical error "systemis" on line 17 and "said presently layer-2 device" on line 18. The Office recommends that these be amended to recite "system is" and "said present layer-2 device".

4. With regard to claim 7, there appears to be a typographical error "said first layer-2" on line 2. The Office recommends that the claim be amended to recite "said first layer-2 device".

5. With regard to claims 12, 21,35 and 39, there appears to be a typographical error, "said device is connected directly to said device" in lines 9,9,11, and 9 respectively. It appears Applicant intended to mean that said device and said second system are directly connected, and it has been interpreted as such for the purpose of applying art.

6. With regard to claim 13, there appears to be a typographical error "identifying" on line 2. The Office recommends that the claim be amended to recite "identifying".

7. With regard to claim 17, there appears to be a typographical error "said presently layer-2 device" on line 19. The Office recommends that the claim be amended to recite "said present layer-2 device".

8. With regard to claim 26, there appears to be a typographical error "said presently layer-2 device" on line 24. The Office recommends that the claim be amended to recite "said present layer-2 device".

9. With regard to claim 32, there appears to be a typographical error "said first layer-2" on line 2. The Office recommends that the claim be amended to recite "said first layer-2 device".

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claims 1 and 17 recite the limitation "said system" in line 10. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said present layer-2 device recited in line 9, and it has been interpreted as such for the purpose of applying art.

13. Claim 4 recites the limitation "said source system" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said first system recited in claim 1, and it has been interpreted as such for the purpose of applying art.

14. Claims 12 and 21 recite the limitation "said system" in line 7. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said second system recited in lines 4-6, and it has been interpreted as such for the purpose of applying art.

15. Claims 13,22, and 36 recite the limitation "said source system" and "said destination system" in line 3. There is insufficient antecedent basis for these limitations in the claim. It appears Applicant intended to refer to said first system and said second system recited in claim 12, and it has been interpreted as such for the purpose of applying art.

16. Claims 14 and 23 recite the limitation "said destination device" in line 2. There is insufficient antecedent basis for these limitations in the claim. It appears Applicant intended to refer to said second system recited in claim 12, and it has been interpreted as such for the purpose of applying art.

17. With regard to claims 17-20, the limitation "device/system" recited in the preamble renders the claim indefinite because it is unclear whether Applicant intends to claim a system or a device.

18. Claim 20 recites the limitation "said source system" in lines 3 and 4. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended

to refer to said first system recited in claim 17, and it has been interpreted as such for the purpose of applying art.

19. Claim 26 recite the limitation "said system" in line 16. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said present layer-2 device recited in line 15, and it has been interpreted as such for the purpose of applying art.

20. Claim 29 recites the limitation "said source system" in lines 3 and 4. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said first system recited in claim 26, and it has been interpreted as such for the purpose of applying art.

21. Claim 35 recites the limitation "said system" in line 9. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said second system recited in lines 6-8, and it has been interpreted as such for the purpose of applying art.

22. Claim 39 recites the limitation "said system" in line 7. There is insufficient antecedent basis for this limitation in the claim. It appears Applicant intended to refer to said second system recited in lines 4-6, and it has been interpreted as such for the purpose of applying art.

23. All claims not individually rejected are rejected by virtue of their dependency from the above claims.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims 1-3, 5-19, 21-28, 30-43, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barrett (2003/0135644) in view of Wang et al. (US 6,538,997).

26. With regard to claims 1, 17, and 26, Barrett discloses a method of processing a command requesting information on any intermediate devices in a route from a first system (transmitting node) to a second system (receiving node), said any intermediate devices being contained in a network implemented on a broadcast medium, said network containing a plurality of devices including said any intermediate devices (Par. 13-25), said method comprising: receiving said command (Par. 87, Lines 1-3); determining a first device which is connected directly to said first system logically viewing said first device as a present device if said second system is not also directly connected to said first device (Par. 14); sending a request packet (requests are made via SNMP) (Par. 54) to said present device requesting information on whether said second system is connected directly to said first device (Par. 15); receiving a response packet from said present device, wherein said response packet indicates whether said second system is connected directly to said present device (Par. 22), wherein said response packet further identifies a subsequent device in a route to said second system if said second system is not connected directly to said present device, wherein said

subsequent device is next to said present device in said route to said second system (Par. 15); and repeating said sending and receiving by using said subsequent device in the place of said present device until said response packet indicates that said second system is directly connected to said present device (Par. 15) (Also see Par. 53-58). Barrett further discloses that layer-2 devices are identified, but fails to disclose the method for identifying them.

Wang et al. (Wang, hereafter) teaches a similar method of determining information on layer-2 devices in a route from a first system to a second system. Both Barrett and Wang disclose that determining information about the layer-2 devices is advantageous since it can help isolate network problems more precisely (Barrett, Par. 60) (Wang, Col 1, Lines 19-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system disclosed by Barrett to identify layer-2 devices in the network as taught by Wang. This allows a more complete topology of the path to be generated and helps to more precisely determine the location of possible problems in the network.

27. With regard to claims 2, 18, and 27, Barrett further discloses that a receiving device receives said command (Par. 86, Lines 1-3), and wherein said receiving device is not directly connected to said first device, wherein said determining further comprises: locating a directly connected device which is connected directly to said first system (Par. 14 and Par. 16-20); using said directly connected device as said present device (Par. 14); and performing said repeating to determine said route (Par. 15).

28. With regard to claims 3, 19, and 28, Barrett further discloses that said locating comprises: substituting said receiving device as said first device; and performing said repeating to determine said directly connected device (Par. 16-20).

29. With regard to claims 5 and 30, Barrett further discloses that said determining, sending, receiving, and repeating are performed in a receiving device (Par. 86, Lines 1-3)

30. With regard to claims 6 and 31, Wang further discloses providing a command line interface to enable a network administrator to enter said command on said receiving device (Col 5, Lines 28-29) as an alternative to a GUI (Col 6, Lines 14-16).

31. With regard to claims 7 and 32, Barrett further discloses that said second system is deemed to be directly connected to said first layer-2 device if said system is connected to a port of said first layer-2 device (Each port is checked until a directly connected device is found) (Par. 15).

32. With regard to claims 8 and 33, Barrett further discloses receiving in said receiving device a neighbor packet from a neighbor device on at least one port (CDP enabled devices broadcast identification via packets to neighbors) (Par 63). However, the system disclosed by Barrett in view of Wang fails to specifically disclose concluding in said receiving device that a system communicating on another port is connected directly to said another port by the absence of reception of neighbor packets on said another port.

However, this would be an obvious addition to the system. Barrett discloses that

CDP neighbor data will not be transmitted if there are no switches on the segment (Par. 63, Lines 2-5). Since there is no neighbor data, there are no switches, and the system must be directly connected. This would be an easy way to determine if a system is directly connected to a device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to conclude that a system communicating on a port is directly connected to said port if no neighbor packets have been received on that port. Since no neighbor packets have been received, there are no switches and the system must be directly connected.

33. With regard to claim 9, Barrett further discloses that said network is implemented using Ethernet/802.3 protocol (Par 37, Lines 1-5).

34. With regard to claim 10, Barrett further discloses that said request packet and said response packet are generated consistent with UDP/IP protocol (SNMP uses UDP) (Par. 50, Lines 1-5).

35. With regard to claim 11, Barrett further discloses that said determining, sending, receiving, and repeating are performed in a computer system (Client terminal) (Par. 86, Lines 1-3).

36. With regard to claims 12, 21, and 35, Barrett discloses a method of tracing a route containing a sequence of devices between a first system (transmitting node) and a second system (receiving node), said method being performed in a device forming a part of a network, said method comprising: receiving in said device a request packet (requests are made via SNMP) (Par. 54) containing an identifier for said second system,

wherein said request packet requests information on whether said second system is connected directly to said device (Par. 14-15); determining in said device whether said device is connected directly to said second system (Par. 15); generating in said device a response packet, wherein said response packet indicated whether said device is connected directly to said second system (Par. 15); and sending from said device said response packet (Par. 15) (Also see Par. 53-58). However, Barrett fails to specifically disclose that the devices are layer-2 devices.

Wang et al. (Wang, hereafter) teaches a similar method of determining information on layer-2 devices in a route from a first system to a second system. Both Barrett and Wang disclose that determining information about the layer-2 devices is advantageous since it can help isolate network problems more precisely (Barrett, Par. 60) (Wang, Col 1, Lines 19-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system disclosed by Barrett to identify layer-2 devices in the network as taught by Wang. This allows a more complete topology of the path to be generated and helps to more precisely determine the location of possible problems in the network.

37. With regard to claims 13,22, and 36, Barrett further discloses that said generating further comprises: identifying in said device a next device, wherein said next device is next to said device in a route from said source system to said destination system (Par. 15, Lines 1-4); and including data identifying said next device in said response packet (Par. 53-58).

38. With regard to claims 14,23, and 37, Barrett further discloses that said identifying comprises: examining a table (IGMP group table) in said device to determine a port on which said destination device communicates (Par. 55); and locating a device connecting on said port, wherein said located device comprises said next device (Directly connected hosts for destination address) (Par. 55).

39. With regard to claims 15,24, and 38, Barrett further discloses that said locating comprises: receiving a neighbor packet from said next device on said port indicating a next device identifier identifying said next device (CDP enabled devices broadcast identification via packets to neighbors) (Par 63); and including said next device identifier in said response packet (Switch data is used when determining next device) (Par. 55).

40. With regard to claims 16 and 25, while the system disclosed by Barrett in view of Wang shows substantial features of the claimed invention (Discussed above), it fails to specifically disclose that said first system is deemed to be connected directly to said device if said first system is present on a port of said device, wherein determining is based on the absence of reception of said neighbor packet on said port.

However, this would be an obvious addition to the system. Barrett discloses that CDP neighbor data will not be transmitted if there are no switches on the segment (Par. 63, Lines 2-5). Since there is no neighbor data, there are no switches, and the system must be directly connected. This would be an easy way to determine if a system is directly connected to a device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to conclude that a system communicating on a port is

directly connected to said port if no neighbor packets have been received on that port. Since no neighbor packets have been received, there are no switches and the system must be directly connected.

41. With regard to claim 34, the limitations are met by the rejection cited above for claims 9 and 10.

42. With regard to claim 39, Barrett discloses a device for supporting the tracing of a route containing a sequence of devices between a first system (transmitting node) and a second system (receiving node), said device being comprised in a network based on a broadcast medium, said device comprising: an inbound interface receiving a request packet (requests are made via SNMP) (Par. 54) containing an identifier for said second system, wherein said request packet requests information on whether said second system is connected directly to said device (Par. 14-15); a next hop block determining whether said device is connected directly to said second system (Par. 15); a generate request/response block generating a response packet, wherein said response packet indicates whether said device is connected directly to said second system (Par. 15); an outbound interface sending said response packet (Par. 15) (Also see Par. 53-58).

However, Barrett fails to specifically disclose that the devices are layer-2 devices.

Wang et al. (Wang, hereafter) teaches a similar method of determining information on layer-2 devices in a route from a first system to a second system. Both Barrett and Wang disclose that determining information about the layer-2 devices is advantageous since it can help isolate network problems more precisely (Barrett, Par. 60) (Wang, Col 1, Lines 19-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system disclosed by Barrett to identify layer-2 devices in the network as taught by Wang. This allows a more complete topology of the path to be generated and helps to more precisely determine the location of possible problems in the network.

43. With regard to claim 40, Barrett further discloses a memory storing a first table and a second table, said first table indicating a port on which each system communicates (neighbor table) (Par. 55), said second table indicating a device connecting to each port (IGMP Group table) (Par. 54); and a port determination block determining a port on which said second system communicates (Par. 55), wherein said next hop block examines said second table to determine said a next device according to the port determined by said port determination block, wherein said next device is contained in said sequence of devices (Directly connected hosts for destination address) (Par. 55) (Also see Par. 13-15).

44. With regard to claim 41, Barrett further discloses that said next hop block determines that said second system is directly connected to a first port indicated by said first table if no device is associated with said first port in said second table (Router table reads "directly connected") (Par. 52).

45. With regard to claim 42, Barrett further discloses a user interface receiving said a trace command from a network administrator (Browser, Par. 86 or Application, Par 88).

46. With regard to claim 43, Barrett further discloses that wherein said next device is not directly connected to said first system, said device further comprising a control logic

to trace a directly connecting device connecting directly to said first system, wherein said route is traced from said directly connecting device using said inbound interface, said outbound interface, said next hop block and said generate request/response block (Directly connected device is found using the trace method) (Par. 16-20).

47. With regard to claim 45, Barrett further discloses a response processor to receive a response packet, wherein said response packet indicates a next device in said route, wherein said generate request/response block generates another request packet directed to said next device, wherein said another request packet requests said next device to indicate whether said second system is connected directly to said next device (Each successive node is checked until a directly connected one is found) (Par. 15).

48. Claims 4,20,29, and 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Barrett (2003/0135644) in view of Wang et al. (US 6,538,997) in further view of Murhammer et al.

49. With regard to claims 4,20,29 and 44, while the system disclosed by Barrett shows substantial features of the claimed invention (discussed above), it fails to disclose that said locating comprises sending a multicast packet directed to a plurality of devices, said multicast packet containing an identifier of said source system, wherein each of said plurality of devices is designed to respond indicating if said source system is connected directly to the device

Murhammer et al. teach a method of locating a system by sending a multicast (broadcast is a special type of multicast) packet to a plurality of devices containing an

identifier of said source system (system B), wherein each device which is directly connected to the source system (router R responds that it is directly connected) will respond (Page 71, Section 2.4.4.1). This method allows a system or device to determine the location of another system or device by sending a request to all the devices in the network asking if they are connected to the desired system, allowing any device to be easily located.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the location of the source system by sending a multicast packet with the identifier of the source system to a plurality of devices in the network. The devices would respond only if they are directly connected to the source system, allowing the first device to be easily located and begin the trace.

Conclusion

50. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

51. The reference titled "TCP/IP Tutorial and Overview" contains an excerpt from a larger document. Since most of the document is not relevant, and it exceeds 700 pages, it has not been included in its entirety. It is available in electronic form at <http://www.noc.garr.it/docum/tcp.pdf>

52. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 703-305-8878. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 703-305-4792. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.S. 6/10/2004



FRANTZ B. JEAN
PRIMARY EXAMINER